

Name: _____ Date: _____

Polynomial Factoring solution (version 11)

1. The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Use the quadratic formula to solve the following equation.

$$x^2 - 6x + 27 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(27)}}{2(1)}$$

$$x = \frac{-(-6) \pm \sqrt{36 - 108}}{2(1)}$$

$$x = \frac{6 \pm \sqrt{-72}}{2}$$

$$x = \frac{6 \pm \sqrt{-36 \cdot 2}}{2}$$

$$x = \frac{6 \pm 6\sqrt{2}i}{2}$$

$$x = 3 \pm 3\sqrt{2}i$$

Notice that i is NOT under the square-root radical symbol!!

2. Express the product of $-8 - 7i$ and $-6 - 4i$ in standard form $(a + bi)$.

Solution

$$(-8 - 7i) \cdot (-6 - 4i)$$

$$48 + 32i + 42i + 28i^2$$

$$48 + 32i + 42i - 28$$

$$48 - 28 + 32i + 42i$$

$$20 + 74i$$

Polynomial Factoring solution (version 11)

3. Write function $f(x) = x^3 + 9x^2 + 8x - 60$ in factored form. I'll give you a hint: one factor is $(x + 5)$.

Solution

$$\begin{array}{c|cccc} & 1 & 9 & 8 & -60 \\ -5 & & -5 & -20 & 60 \\ \hline & 1 & 4 & -12 & 0 \end{array}$$

$$f(x) = (x + 5)(x^2 + 4x - 12)$$

$$f(x) = (x + 5)(x + 6)(x - 2)$$

4. Polynomial p is defined below in factored form.

$$p(x) = -(x + 6) \cdot (x + 1)^2 \cdot (x - 4)$$

Sketch a graph of polynomial $y = p(x)$.

